

AMENDMENT TO THE CLAIMS

Claims 1-31 (Canceled)

32. (Previously presented) A method for making a disulfide, comprising the steps of:
- (1) oxidation of a mercaptan with sulfur, wherein the oxidation reaction has a 1-10% molar excess of mercaptan to sulfur;
 - (2) removing hydrogen sulfide;
 - (3) reacting the product of step (2) remaining after the hydrogen sulfide removal with hydrogen peroxide; and
 - (4) removing water to less than 1 wt%.
33. (Previously presented) The method of claim 32, wherein the mercaptan is β -mercaptoethanol and the disulfide is dithiodiglycol.
34. (Previously presented) The method of claim 32, wherein the mercaptan is selected from the group consisting of C₂ to C₂₀ alkyl mercaptans, cycloalkylmercaptans, functionalized mercaptans and acids and esters thereof.
35. (Previously presented) The method of claim 32, wherein the oxidation reaction has a 3-5% molar excess of mercaptan to sulfur.

36. (Previously presented) The method of claim 32, wherein the water is removed to less than 0.5 wt%.
37. (Previously presented) The method of claim 32, wherein greater than 80% of the hydrogen sulfide is removed.
38. (Previously presented) The method of claim 37, wherein greater than 90% of the hydrogen sulfide is removed.
39. (Previously presented) The method of claim 32, wherein the removal of the hydrogen sulfide is by vacuum, nitrogen sparge or a combination thereof.
40. (Previously presented) The method of claim 32, wherein the hydrogen peroxide in step (3) has a concentration of hydrogen peroxide in solution of between 5 wt% and 98 wt%.
41. (Previously presented) The method of claim 32, wherein the hydrogen peroxide in step (3) has a concentration of hydrogen peroxide in solution of between 25 wt% and 70 wt%.
42. (Previously presented) The method of claim 32, wherein the hydrogen peroxide in step (3) has a concentration of hydrogen peroxide in solution of between 27.5 wt% and 50 wt%.

43. (Previously presented) The method of claim 32, wherein the water removal in step (4) is by vacuum stripping.
44. (Previously presented) The method of claim 32, wherein the water removal in step (4) is by vacuum stripping with a nitrogen sparge.
45. (Previously presented) The method of claim 32, wherein the water removal in step (4) is by a wiped film evaporator.

Claims 46-47 (Canceled)

48. (Previously Presented) The method of claim 33, wherein the product of step (2) comprises greater than 92 wt% dithiodiglycol.
49. (Previously Presented) The method of claim 33, wherein the product of step (2) comprises less than 3 wt% trithiodiglycol.
50. (Previously Presented) The method of claim 33, wherein the product of step (2) comprises less than 5 wt% unreacted β -mercaptoethanol.
51. (Previously Presented) The method of claim 33, wherein the oxidation reaction has a 3-5% molar excess of mercaptan to sulfur.

52. (Previously Presented) The method of claim 33, wherein the removal of the hydrogen sulfide is by vacuum, nitrogen sparge or a combination thereof.
53. (Previously Presented) The method of claim 33, greater than 80% of the hydrogen sulfide is removed.
54. (Previously Presented) The method of claim 53, wherein greater than 90% of the hydrogen sulfide is removed.

Claims 55-61 (Canceled)

62. (Currently amended) The method of claim ~~32~~ 33, wherein the residual water is less than 0.5 wt%.
63. (Previously Presented) The method of claim 33, wherein the product of step (2) comprises greater than 87 wt% dithiodiglycol; less than 5 wt% trithiodiglycol; and less than 7 wt% unreacted β -mercaptoethanol.
64. (Previously Presented) The method of claim 33, wherein the residual β -mercaptoethanol in the product of step (3) is less than 0.02 wt% mercaptan.